

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No. 09/774,877

REMARKS

This amendment, submitted in response to the Office Action dated February 26, 2003, is believed to be fully responsive to each point of rejection raised therein. Accordingly, favorable reconsideration on the merits is respectfully requested.

As a preliminary matter, Applicant has amended the specification as indicated above.

Claims 1-12 remain pending in the application. Claims 1-8 have been rejected under 35 U.S.C. § 102 as being anticipated by Hilton (U.S.P. 5,452,416).¹ Claims 9-12 have been rejected under 35 U.S.C. § 103 as being unpatentable over Hilton. Applicant submits the following arguments in traversal of the prior art rejections.

Applicant's invention relates to a method for displaying images according to a selected protocol sequence. Medical diagnoses of x-rays, CT, MRI images, etc. require displays of different image views to be arranged in a particular temporal and/or spatial order for examination and analysis by a physician. However, conventionally known display devices do not provide for a protocol sequence in which the display order for temporal and spatial arrangement of the medical images can be rearranged in a meaningful way. Rather, the physician must memorize the spatial order of image arrangements provided by any given display protocol, and call up the particular protocol as desired. In other words, several display protocols can be provided. However, the temporal (or spatial) order in which the displays of multiple images are output are not part of a protocol sequence. As a result, this conventional technique imparts an additional burden to the user.

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No. 09/774,877

Applicant's invention, as illustrated by example in Figs. 3-4, obviates this deficiency.

Fig. 3 illustrates a first display sequence P1, a second display sequence P2 and a third display sequence P3. Each of the display sequences is useful for analysis. For example, P1 shows a sequence of cross-sectional images; P2 allows comparison between a presently formed medical image in comparison with a previously formed medical image; and P3 shows front and side views of a chest x-ray and CT. Fig. 4 shows protocol sequences comprising different display arrangements of P1, P2 and P3. By selection of the protocol sequence, the order of displays P1, P2, P3 will be output without the physician memorizing the display sequences.

Turning to the cited art, Hilton relates to a known display apparatus as described in the background of the invention. Hilton displays images in a first sequence, which are also correlated with images in a second sequence output to a different display device. If an image in the first sequence is switched, its corresponding image in the second sequence also becomes switched. More particularly, Fig. 3 of Hilton illustrates one series of axial images T2 of an MRI output. The system of Hilton contemplates that side by side monitors would output a similar arrangement of axial images, one monitor displaying the axial images T2 and the other monitor displaying the axial images T1. If the image for T1, enumerated N (N= 1 to 18) is switched, then its corresponding enumerated image N for T2 is also switched. The arrangement for the image sequences T1 or T2 is not relegated to a particular order. Col. 7, lines 16 to col. 8, line 2. Therefore, like the conventional case, the physician must memorize that a particular protocol

¹ Hilton was also the sole reference cited in the IDS of February 1, 2001, and therefore we are not separately requesting the Examiner to return the PTO 1449 Form.

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No. 09/774,877

layout (e.g. T1) corresponds to a first type of arrangement and another protocol layout (e.g. Fig. 4, “series mode”) corresponds to another to display images in a particular sequence.

The Examiner maintains that Hilton teaches each feature of independent claims 1 and 5. The Examiner’s rejection is not supported for the following reasons.

First, the claim describes a protocol sequence including plural display protocols lined up in a predetermined order. The order of plural images becomes switched by switching the display protocols. The broadest interpretation of the claim describes plural modes of display, and in addition, the plural modes of display are arranged in a predetermined order to provide a protocol sequence.

The Examiner has apparently misinterpreted the claims. The Examiner correctly states that Hilton discloses an axial series T2 comprising 18 images. However, beyond this point, the Examiner appears to be confusing concepts between a “protocol sequence” and a “display protocol.” The Examiner’s rejection suggests that the display layouts are “predetermined” and in this connection describes that two modes are taught by Hilton, the series mode and the monitor mode. Whether the image arrangements in the two modes in Hilton are “predetermined” or not is not the important distinction. The claims describe that the protocol sequence includes a predetermined order for the plural display protocols. The Examiner appears to be construing the claim to read that the display protocols (e.g. modes) include a predetermined arrangement of plural images. This is not sufficient to support the rejection.

The present invention is not merely concerned with the ordering of the images in a particular view of plural images but also with the sequence in which those views are displayed.

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No. 09/774,877

There are two senses of “ordering” described by the claim. Assuming *arguendo* that Hilton has any “predetermined order”, Hilton only describes one sense of ordering (for an image layout of multiple images). The monitor mode and the series mode are construed to comprise display protocols in the Examiner’s view. However, Hilton lacks the second sense of ordering, the order for the plural layouts of multiple images. Hilton fails to any predetermined character for the “monitor” and “series” layouts collectively that would provide a “sequence” of such layouts.

Second, the Examiner contends that Hilton “suggests” that the display protocols that define the layout are predetermined. Anticipation is not based on what a reference “suggests” but what a reference actually teaches. The suggestion cited by the Examiner, which Applicant contends is incorrect for the reasons stated above, does not support an anticipation rejection. Therefore, Applicant would request withdrawal of the rejection under 35 U.S.C. § 102 for independent claims 1 and 5. To the extent that a side by side arrangement of T1 and T2 axial images may be output. This corresponds to an arrangement of a single layout format (the 18 image grid) and not plural layouts as described by the claims.

Claims 2-4 and 6-8 are patentable based on their dependency. With further regard to claim 2, this claim contemplates selection of a protocol sequence from a plurality of sequences. The Examiner cites cols. 5-6 to teach this aspect of the claims. The Examiner’s position is incorrect. While the cited portions permit user selection, the selection is not for one of multiple sequences. At best, the selection permits selection of a layout, but not the order arrangement for plural layouts. Therefore, claims 2-4 and 6-8 are patentable for this additional reason.

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No. 09/774,877

With regard to claims 9-12, the Examiner concedes that Hilton does not teach the recording medium but suggests that a medium is obvious in view of the disclosure. Applicant would submit that because claims 9-12 include features similar to that described above for claims 1-5, the arguments set forth above also apply to claims 9-12.

Applicant has added claims 13-21 to describe features of the invention more particularly.

In view of the above, Applicant submits that claims 1-21 are in condition for allowance. Therefore it is respectfully requested that the subject application be passed to issue at the earliest possible time. The Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



Susan Perng Pan
Registration No. 41,239

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE



23373

PATENT TRADEMARK OFFICE

Date: May 27, 2003

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No. 09/774,877

APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE
IN THE SPECIFICATION:

The specification is amended as follows:

Page 4, last paragraph bridging page 5.

The expression "display protocol" refers the protocol which defines image layout, image display conditions, image processing conditions, etc., based on an examination, a series, the examining doctor or group of doctors, the place an image will be used and/or the purpose of the image, etc. More specifically, a definition by which a screen is divided into four regions in which are displayed a front view X-ray image of the chest taken during the current examination in the upper left region, a front view X-ray image of the chest taken in the past in the lower left region, a side view X-ray image of the chest taken during the current examination in the upper right region, and a side view X-ray image of the chest taken in the past in the upper right region, or alternatively, a definition by which a screen is divided into 9 regions in which a plurality of Tomography images obtained by a CT apparatus are lined up and displayed, or a definition by which projection images and cross-sectional images obtained by a CT apparatus are lined up and displayed, or a definition by which cross-sectional images obtained by a CT apparatus are able to be switched and displayed, or a definition by which for images T1 and T2 obtained by an MRI apparatus in a special examination mode, a display screen may be ~~dived~~ divided up and images displayed based on whether or not a contrast medium was used when an image was taken, etc., may be employed as display protocols.

Page 12, last paragraph bridging pages 12 and 14.

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No. 09/774,877

Next, for cases in which images obtained in a past examination are to be compared to images obtained in the current examination, the display screen of monitors 2A and 22B are each divided into four sections and each of the images are displayed: in region A1, image S1; in region A2, image S2; in region S3, image O1; in region A4, image S4 O2; in region B1, image S3; in region B2, image S4; in region B3, image O3; and in region B4, image O4. Here, image S1 has only one image, but image S2, S4, O2 and O4 each have 6 cross-sectional images, therefore, by employing input means 23, the images are sent in order or in reverse order, according to the number assigned to each mage (generally, the slice order, in other words, the order of the slice position), and switched and displayed. Further, a mark for showing what is called the referencing position of the cross-section is displayed in images S1, S4, O1 and O4. In this way, it is possible to see which position of the cross-sectional positions of images S1, S4, O1 and O4 is currently being displayed. This type of display layout is called a stack display, and by displaying such a stack display it is possible to compare image S2 to image O2, and image S4 to image O4; that is to say, comparing the images obtained in the past examination to the images obtained in the current examination is easy to perform. In addition, if switching of the images of the past examination and images of the present examination is carried out at the same time, by switching only the images on one side, because the images on the other side are also sent in order, it is easy to compare the images on both sides. This type of image protocol is designated as P2.

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Appln. No. 09/774,877

IN THE CLAIMS:

Claims 13-21 are added as new claims.